

**REMARKS**

Claims 1 - 18 are presently pending. In the above-identified Office Action, the Examiner rejected Claims 1, 2, 9 - 11, 14 - 16 and 18 under 35 U.S.C. § 103(a) as being unpatentable over Paranto *et al.* (US Patent No. 5,621,514), hereinafter 'Paranto'. Claims 4 - 6 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Paranto in view of Gross (US Patent No. 4,687,281) and further in view of Rice *et al.* (US Patent No. 6,061,170). Claims 3 and 7 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Paranto in view of Gross and further in view of Kafka *et al.* (US Patent No. 6,421,573). Claims 3 and 8 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Paranto in view of Gross and further in view of Coppock *et al.* (US Patent No. 4,339,821). Claim 12 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Paranto in view of Gross and further in view of Phillips *et al.* (US Patent No. 5,835,199). Claim 13 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Paranto in view of Gross and further in view of Pearson (US Patent No. 4,516,853). Claim 17 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Paranto in view of Gross and further in view of Low *et al.* (US Patent No. 3,737,231).

By this Paper, Applicant has amended Claim 1 to highlight the patentably distinct features thereof and canceled Claims 2, 17 and 18. Support for the amendments to Claim 1 is found at page 6, lines 7 - 13 and page 7, lines 7 - 13 of the present Specification. For the reasons set forth more fully below, reconsideration, allowance and passage to issue are respectfully requested.

The present invention addresses the need in the art for a laser transmitter capable of producing the coherence, high power, and high bandwidth required for use in synthetic aperture ladar applications. In accordance with the invention, a synthetic aperture ladar system is taught including a mode locked laser transmitter; a receiver adapted to detect signals transmitted by the laser and reflected by an object, a mechanism for moving the laser whereby the direction of motion forms a large angle with the direction of the transmitted

laser beam and a mechanism for processing the detected signals to increase cross-range resolution.

The invention is set forth in Claims of varying scope of which Claim 1, as amended, is illustrative. Claim 1 now recites:

1. A ladar system comprising:
  - a mode locked laser transmitter;
  - a receiver adapted to detect signals transmitted by the laser and reflected by an object;
  - means for moving the laser transmitter and receiver, wherein the direction of motion forms a large angle with the direction of the transmitted laser beam; and
  - means for processing the detected signals to increase cross-range resolution. (Emphasis added.)

None of the references, teach, disclose or suggest the invention as presently claimed. That is, none of the references, taken alone or in combination, teach, disclose or suggest a ladar system with a **mode locked** laser transmitter and a mechanism for processing the detected signals to increase cross-range resolution as presently claimed.

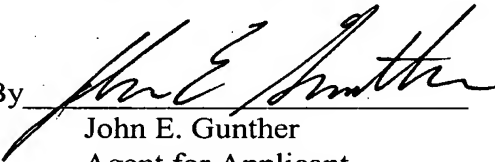
In the above-identified Office Action, the Examiner relied heavily on Paranto and Gross. Paranto purports to teach a random pulse burst range resolved Doppler laser radar. Gross purports to teach a synthetic aperture laser radar system. However, neither Paranto nor Gross, taken alone or in combination, teach, disclose or suggest a system or method for processing signals returns from a mode locked laser transmitter to improve cross-range resolution as presently claimed. Paranto simply uses Doppler data to establish range-rate or velocity.

Gross does not disclose a synthetic aperture ladar. At most, Gross describes a synthetic interferometric imager that creates a scanning fringe pattern at the target by splitting a laser beam into two components that interfere at the target and then shifting the phase of one beam to cause the fringe pattern to scan. Gross does not discuss the nature of the laser transmitter except to note that the two beams must be coherent. Gross certainly does not teach or disclose moving the transmitter and receiver with respect to the target or processing the returns to increase cross-range resolution.

Thus, the present claims are believed to be in proper form for allowance.  
Accordingly, reconsideration, allowance and passage to issue are respectfully requested.

Respectfully submitted,  
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